



SANTEE COOPER'S INVESTMENT AND ASSET RECOVERY: LESS WASTE IS GOOD FOR BUSINESS



In February, Santee Cooper toppled the 300-foot stacks at Grainger Generating Station, the final step in dismantling an old coal-fired facility and a powerful symbol of our gains this year toward a clean, diverse and still reliable generating portfolio.

In this, our 2016 Environmental Annual Report, you will see the many ways Santee Cooper has advanced on this front.

Construction of V.C. Summer nuclear units 2 and 3 saw significant progress this year, after we amended our contract with Westinghouse to provide an opportunity to substantially fix the price of constructing the units and bring in Fluor Corp. as project manager. These new units, built in partnership with South Carolina Electric & Gas Co., form the foundation of Santee Cooper's plan to reduce carbon dioxide emissions and comply with the anticipated Clean Power Plan. They are also the centerpiece of our goal to meet 40 percent of our customers' energy requirements by 2020 through clean energy and energy efficiency programs.

We continue to buy natural gas generation to supplement what we produce at Rainey Generating Station. We increased our beneficial use of ash at three generating stations, excavating ash ponds and providing it as a raw material for use in cement and concrete products, and so creating jobs and economic benefit as a result. In April, 10 years after we introduced utility solar to South Carolina electric customers, we rolled out new solar programs including the state's first community solar project.

As we have done since September 2001, Santee Cooper continues to offer customers (and members of the state's electric cooperatives) the optional purchase of Green Power, with revenues invested in new renewable programs serving the state.

When our board of directors approved our 2020 goal back in 2007, the finish line seemed a long way off. With 2020 just around the corner, we are on track to achieve that goal. More than that, our good partnerships with SCE&G and the state's electric cooperatives are building nuclear and renewable energy resources that will transform our energy landscape and power South Carolina for generations to come.



*Lonnie N. Carter*

**Lonnie N. Carter**  
*President and Chief Executive Officer*

**Editor**  
Nicole A. Aiello

**Art Direction and Design**  
Jennifer Dease

**Photography/Photo Editor**  
Paul Zoeller

**Writers**  
Nicole A. Aiello  
Phil Fail  
Susan Mungo  
Willard Strong

**Graphic Artist**  
Stephanie Dukes

PowerSource is published by Santee Cooper Corporate Communications. It is printed and distributed by Santee Cooper Corporate Print and Mail. Use of materials is not authorized without permission of the editor.

Address all correspondence to:  
**Corporate Communications**  
Santee Cooper  
1 Riverwood Drive  
Moncks Corner, SC 29461-2901

email: nicole.aiello@santeecooper.com  
phone: 843-761-7030



# One Man's Trash...

Investment and Asset Recovery at Santee Cooper

*Phil Fail*

## Features



**11** Santee Cooper Green Power 15th Anniversary  
*Willard Strong*



**16** A Heart of Steel  
*Susan Mungo*



**26** Artistic Transformations  
*Nicole A. Aiello*

**10** Santee Cooper is for the Birds  
*Aaron Grant*

**24** Centennial Celebration of Nature  
*Susan Mungo*

**34** 2017 Environmental Data

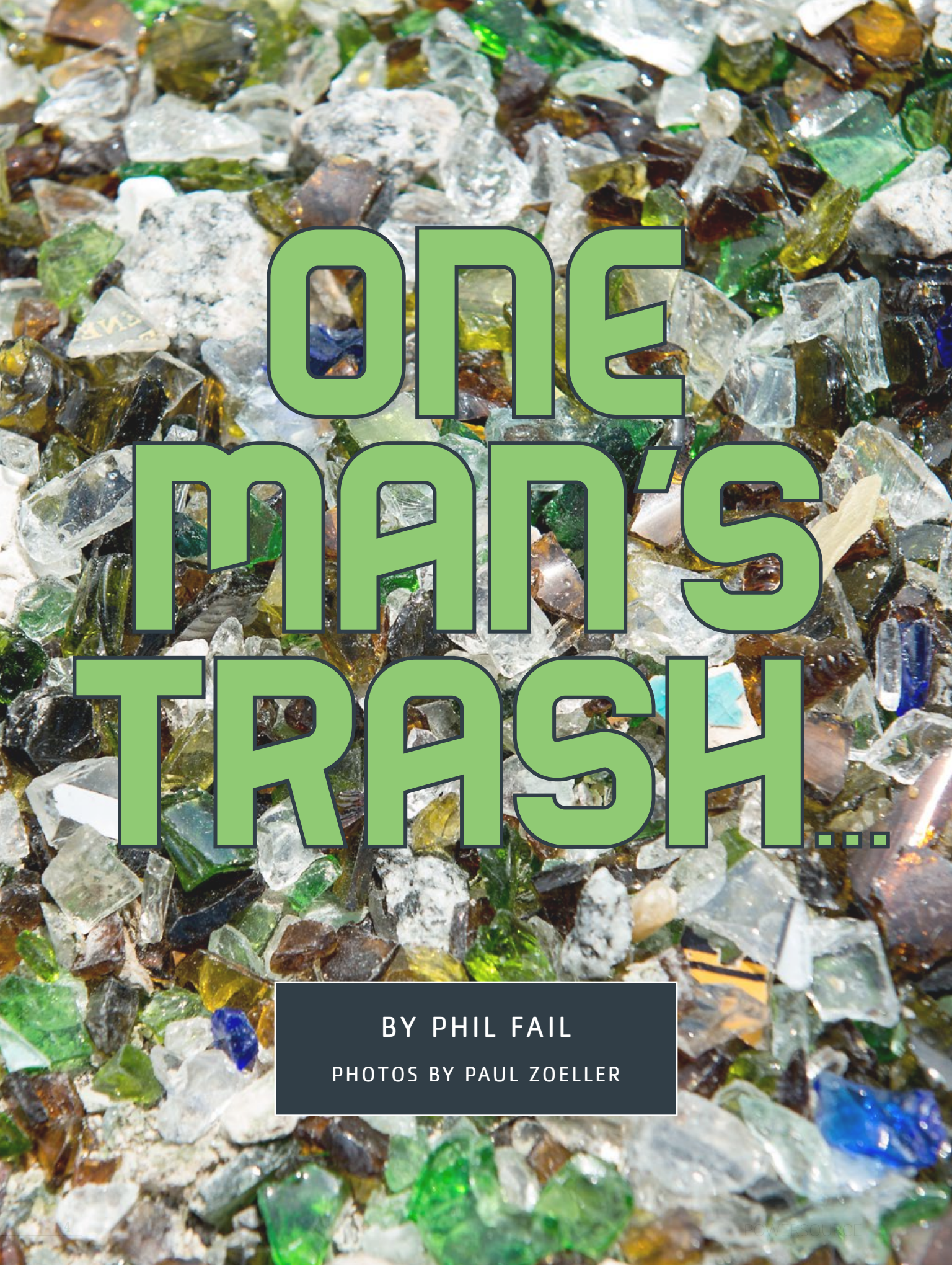
## About the Cover

Photo by Paul Zoeller

Copper bright wire is the result of processing scrap coated copper wire, which increases its value to more than twice the dollar amount of the coated copper wire. Read more about Santee Cooper's Investment and Asset Recovery beginning on page 4.







Previous page: Colorful glass is reused as ground covering around landscaping at some Santee Cooper offices.

*An old adage states, one man’s trash is another man’s treasure.* In this day of reduce-reuse-recycle, that adage is more appropriate than ever. At Santee Cooper, reducing our use, reusing what we already have and recycling what we cannot use is an important endeavor.

Santee Cooper regularly assesses what we use and how we can reduce our use of everything from supplies to electricity. However, it may be surprising to some that Santee Cooper reuses much of what it already has and also surprising just how many tons of trash get recycled.

**Reusing: Turning Trash Back into Treasure**

Although it has an unassuming name, the after market materials services department at Santee Cooper is a notable asset. It is comprised of investment recovery and asset recovery. Reusing materials is a goal or even second nature for some individuals; for Santee Cooper, it’s a necessity that creates a net positive for the company.

“When something is broken, obsolete or when a group within Santee Cooper no longer has a use for it, it comes to us,” said Supervisor of After Market Materials Services Mark Shepherd. “Together, we are responsible for the disposal of all Santee Cooper excess and obsolete assets. We are constantly researching and establishing markets to make sure our assets are disposed of or reused in a way that both maximizes Santee Cooper’s return on investment and is in line with our goal to be good environmental stewards.”

After market materials services has an admirable mission statement that dovetails well into Santee Cooper’s mission to be the leading resource for improving the lives of South Carolinians. The department is tasked with disposing of assets in a manner that takes advantage of both their utilization and Santee Cooper’s return on investment. It is based on sound, ethical



At left: Johnny Davenport refurbishes Heritage outdoor lights so they can be reused.



investment recovery business practices and is compliant with all legal, statutory and regulatory requirements. It also provides optimal customer service to clients and customers.

Keep in mind, excess and obsolete assets include almost everything: furniture, tools, heavy equipment, poles, street lighting and even office trash. All assets are reviewed to determine if they can be repurposed within the company. Some items need to be recycled, while others can be refurbished, reused or sold. That has a bigger, more positive impact. Instead of an old item taking up space in a landfill or gobbling up resources to break it down to components, it can be reused and brought back to life.

That's where Santee Cooper's asset recovery team fits in. One example of how they do that is visible at each of Santee Cooper's line technician crew quarters.

"We provide containers at each of the line crew quarters. Once crews separate the recovered material into four containers, we bring them to Asset Recovery, weigh them and sort out the components," explained Recycle Specialist Chris Faircloth. "We carefully sort the contents into categories and then prepare them for reuse."

Through a multistaged process, items that have been discarded by line crews are collected, sorted, cleaned, refurbished and returned to stock. This allows Santee Cooper to avoid the cost of having to purchase additional stock. And after minimal investment, those items are put back to use.

"We also created a book that focuses on the items that we refurbish," Faircloth added. "Along with 'before' and 'after' images of each refurbished item, we record the time invested and process

cost, from its collection to its return to stock, to restore the item. We also list the savings associated with the process. On average, each year we return over \$80,000 worth of items back to stock, and that saves money for Santee Cooper and ultimately for our customers."

These employees also help maximize Santee Cooper's return on investment through the collection and disbursement of various grades of cable and wire from throughout Santee Cooper's service areas. Some of these items can be used again at Santee Cooper, others are sold or recycled. They've even developed a special catalog to help guide the process.

Investment Recovery Agent III George Rheubottom said the catalog helps both line crews and vendors understand the various grades of metals and how they are grouped, so they can be sold to contract holders for their use or for them to be recycled.

"Being able to certify that the items in the container meet certain specifications, for instance, that there's no aluminum mixed in with the copper, can make a big difference in the price we can command for our metals," said Rheubottom, a 20-year veteran of the department.

To the layman, it's almost magic. With some effort and know-how, employees can dramatically increase the value of the material.

For instance, coated copper wire enters the processing center as scrap coated copper. Asset recovery cuts the wire into 12-inch lengths and runs them through a stripper to remove the rubber coating. The end result is "copper bright wire," which has a value that's more than twice the coated copper wire. Even better, nothing is wasted. The leftover coating ends up being recycled into mulch.



This page, clockwise from top: Recycle Specialist Dremad Cooper uses a media blaster to prepare parts for painting and (inset) tests a refurbished outdoor light for resale.

Johnny Davenport, right, and Sam Carlucci sort through scrap metal at investment recovery.

Recycle Specialist Chris Faircloth holds a refurbished insulator, which will be tested and put back to work.





At left: Mark Shepherd, after market material services supervisor, and Ginny Cox, investment recovery agent, are responsible for disposal of assets that both maximizes Santee Cooper's return on investment and is in-line with its environmental goals at investment recovery.

"Our collection and segregation efforts have allowed us to contribute over \$300,000 annually to Santee Cooper's bottom line," Rheubottom said.

Asset recovery also serves Santee Cooper's Myrtle Beach and Moncks Corner areas for servicing construction and debris containers. Through landfill avoidance and in conjunction with our recovery and refurbishment program, another \$70,000 is saved annually.

## Recycling: Just Toss It Baby

Not only do after marketing materials services employees make it possible to reuse assets internally or externally, they also administer Santee Cooper's single stream recycling campaign. Investment recovery has been honored with a number of state, regional and national awards for their programs in solid waste management, single stream education and implementation, and recycling awareness.

The investment recovery video "Toss It Baby," which can be found on the YouTube channel SanteeCooperTV, was created to promote single stream recycling. It was a hit with

Santee Cooper employees and even has a cameo by Santee Cooper President and CEO Lonnie Carter. The video has been picked up and used throughout the United States to inform business and educational institutions on the ease of single stream recycling.

Our most commonly recycled items are paper, plastics and metal cans, all collected in single stream bins strategically placed throughout the company, which makes it easy for employees to recycle.

Santee Cooper strives to be a zero-waste business. Annually, Santee Cooper recycles nearly 2 billion pounds of paper, cardboard, aluminum cans, used electric poles, scrap metal, wires, batteries and other industrial materials, and combustion byproducts like gypsum and fly ash.

All in all it's a group effort, one that shows how Santee Cooper makes sound business decisions that help us live up to our commitment to protect the environment. And that's backed up by over \$2.6 million dollars added to coffers in the last six years.

Below: Wire collected from line crew quarters is brought to Santee Cooper's After Market Materials Services to be sorted and graded.



## PURCHASING YOUR OWN TREASURE

Some items that make their way to Santee Cooper's asset and investment recovery are up for public bid. People can sign up to be on the public bid list at <https://www.santeecooper.com/BidderList>.

Santee Cooper also holds limited-time, walk-in sales in Moncks Corner and Myrtle Beach where excess furniture, electronic equipment and other items are offered.

Santee Cooper accepts bids and executes fixed-term contracts for commodities such as copper, aluminum and other materials. The materials are removed periodically to be recycled.

Lastly, Santee Cooper engages auction houses to represent heavy equipment, tools, vehicles and specialized electrical equipment for auction to specialty markets.

**For more information, contact investment recovery at 843-761-7079.**





# SANTEE COOPER IS FOR THE BIRDS

The idea of engaging nature on Santee Cooper campuses advanced last year after employees volunteered to build and maintain an employee garden. The success of the garden – an interactive, nature-based project on a Santee Cooper campus – caused a similar idea to fly into action.

The idea was to have bird-friendly campuses, starting with select Santee Cooper office locations. The bird-friendly initiative was heavily supported by Senior Vice President and General Counsel Mike Baxley, Acting Director of Environmental Management Systems Will Brown, and Brad Sale, education coordinator at Old Santee Canal Park. Brown and Sale are members of Santee Cooper’s Employee Sustainability Engagement Committee, and Sale is well-known for his interaction and keen knowledge of birds at Old Santee Canal Park in Moncks Corner.

These flying, feathered friends cannot just hunker down anywhere. Much like other animals, birds seek shelter and a reliable food source when choosing a location to call home. Fortunately for the birds, the bird-friendly initiative at Santee Cooper offers a warm welcome to each and every visitor that enters the campus, whether that visitor is a customer coming to pay a bill or a hungry hummingbird seeking sweet nectar. Santee Cooper now offers all of the essential necessities and more for hummingbirds, bluebirds, purple martins, and other bird species.

This project would not be possible without the dedication of Santee Cooper employees who took on the responsibility of constructing and maintaining birdhouses and feeders. Not only did Baxley, Brown and Sale play a large role in formulating the blueprint for the project, a number of employees have volunteered their time and talents. Employees split duties and chose locations for hummingbird feeders, purple martin boxes and bluebird boxes. They helped construct the boxes, regularly clean the feeders and boxes, and have made the commitment to refill the hummingbird feeders on a regular basis.

The invitation for settlement has officially been sent out to all bird communities near Santee Cooper’s headquarters in Moncks Corner and the Horry-Georgetown Distribution office in Myrtle Beach, and many are flocking to join the party. There’s a colony of purple martins near the Moncks Corner headquarters and frequent bluebird and hummingbird sightings. The project requires employee participation in order to sustain it, and employees’ time and contributions are voluntary.



RUBY-THROATED HUMMINGBIRD

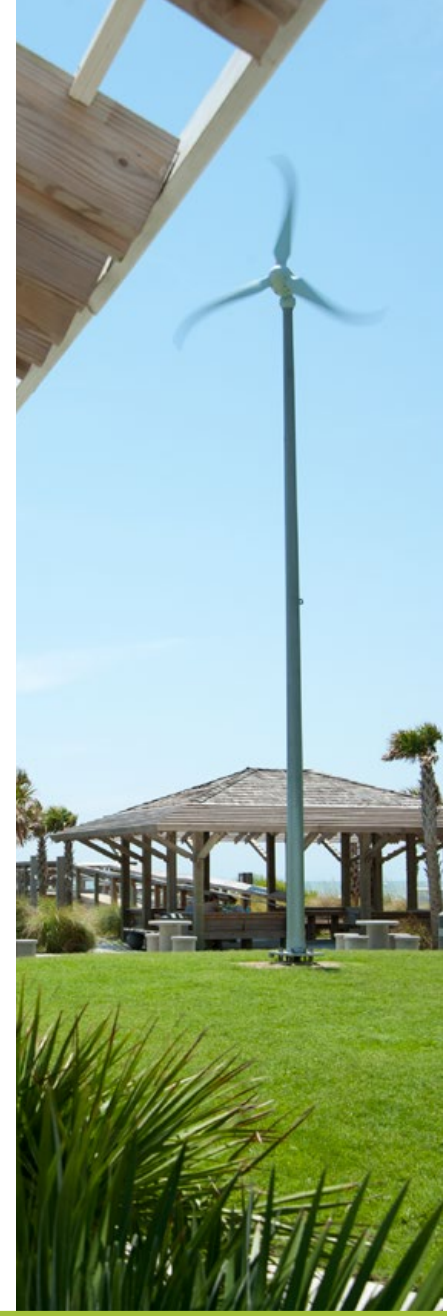


EASTERN BLUEBIRD EGGS

By Aaron Grant  
Corporate Communications Intern



Santee Cooper’s Green Power portfolio includes landfill gas, solar and wind.



# CELEBRATING 15 YEARS OF GREEN POWER AT SANTEE COOPER

By Willard Strong



*On Sept. 4, 2001, Santee Cooper's Horry Landfill Generating Station entered operation, the first renewable energy in the Palmetto State to be put on a commercial electric grid.*



Thus began the pioneering story of Green Power in South Carolina.

This generating station, with the capability of producing up to 3 megawatts (MW) of power, consumes methane gas derived from the landfill's decaying refuse for fuel.

From this beginning 15 years ago, Santee Cooper has advanced Green Power throughout South Carolina to include electricity generated by the wind and the sun.

"We continue to lead the state when it comes to Green Power," said Stephen Spivey, Santee Cooper's manager of renewable energy. "No one has made the commitment we have, particularly with the investment we have made in landfill-gas generation. I think that demonstrates the type of forward-thinking utility that Santee Cooper has always been."

It's hard to argue with the evidence. Today, Santee can point to 29.35 MW of certified

Green Power in its 130-MW renewable energy portfolio. This includes: six methane-gas generating stations, three solar arrays, and one wind turbine.

"Green Power is an evolving area for all major generating utilities and Santee Cooper can proudly point to many achievements," said Marc Tye, Santee Cooper's executive vice president of competitive markets and generation. "We will continue to embrace the possibilities of renewable energy while also being mindful of its limitations."

Santee Cooper's Green Power program maintains national Green-e Energy certification through The Center for Resource Solutions, based in San Francisco, Calif. Green-e Energy certified utility programs are verified annually for their power content, ensuring that the power met Green-e Energy program's environmental and consumer standards.

"The customer knows without a shadow of a doubt that it is certified Green Power,"

Spivey said. "This process has to be signed off on by our internal auditor. The customer can be assured they're getting what they're paying for."

In 2005, Santee Cooper's largest Green Power site, capable of making up to 11 MW of electricity, was dedicated at the Lee Landfill Generating Station near Bishopville. Its generating capability has grown from 5.4 MW to 11 MWs, which at full load could power up to approximately 5,500 average-sized homes.

A year later, Santee Cooper's Green Power grew to include the Richland Landfill Generating Station near Columbia. The Richland County facility is located within a 124-acre landfill owned by Waste Management Inc., one of the largest firms of its type in the business. Green Power at Santee Cooper has advanced in large part because of partnerships Santee Cooper has forged with landfill companies and counties that also own and operate landfills.

**Clockwise from top left: The Horry County Landfill Generating Station is located off S.C. Highway 90 near Conway. Coastal Carolina University Green Power Solar Pavilions double as a bus stop and feature rooftop solar panels capable of powering about 75 computers. The Richland County Landfill was dedicated in 2006. This solar array at the Technical College of the Lowcountry can produce up to 20 kilowatts. The pumps at a landfill generating station feed methane gas to engines that turn a generator to produce electricity.**



SANTEE COOPER GREEN POWER is Green-e Energy certified, and meets the environmental and consumer-protection standards set forth by the nonprofit Center for Resource Solutions. Learn more at [www.green-e.org](http://www.green-e.org).





# GREEN POWER CITIES

Santee Cooper has worked with municipalities to offer them Green Power purchases and the first "Green Power City" was the city of Myrtle Beach, which signed up in 2002. Myrtle Beach continues to lead the way in annual kilowatt-hour purchases. In the 15th anniversary of Green Power, Santee Cooper salutes its Green Power Cities.

City of Myrtle Beach	372,000 kWhs
City of North Myrtle Beach	300,000 kWhs
City of Conway	120,000 kWhs
City of Loris	84,000 kWhs
Town of Moncks Corner	84,000 kWhs
Town of Surfside Beach	84,000 kWhs
Town of St. Stephen	2,000 kWhs
Town of Briarcliffe Acres	4,800 kWhs



Zane Ferris, Waste Management's district manager, said at the time the station was dedicated, "Our landfill provides a clean and affordable source of alternative energy. Waste Management is proud to operate a facility that will actively help produce green energy and contribute to the health of the environment."

The next Green Power chapter made history in July 2006 when solar energy was placed on the commercial grid for the first time in the state. Coastal Carolina University Green Power Solar Pavilions, bus stop shelters featuring solar panels on their roofs, are in a very public place, a busy thoroughfare on a college campus. They're capable of producing 16 kilowatts (kW), which is not on a scale of landfill-gas stations, but can power about 75 computers.

Santee Cooper President and CEO Lonnie Carter spoke at the facility's October 2006 dedication, calling it "a historic day for South Carolina."

Said Carter, "There are many 'firsts' here today: The state's first solar Green Power site, the first solar photovoltaic project at a public university in the state and the first project funded by Green Power participants."

Making power from methane gas at landfills is fairly straightforward. The gas powers an engine that turns a generator. At CCU, sunlight is absorbed by four solar arrays. Energy from the solar panels is converted from direct current to alternating current, power that's found in our homes and businesses.

The output is maximized at the spring and fall equinox, due to the tilt of the angle of the modules. Output is also affected by the temperature of the equipment, weather, humidity, haze and length of day.

Generating Green Power created an opportunity for Santee Cooper to make this renewable energy available to its customers. Sold in 100-kilowatt-hour blocks for \$3 a block, all the money collected by Green Power sales goes back into Green Power projects.

The Coastal Carolina solar panels are a great example. The project's cost was totally funded by customers who voluntarily purchased Santee Cooper's Green Power.

In fact, Santee Cooper is one of only a few utilities in the country that reinvests 100 percent of its Green Power revenue into additional renewable resources.

But perhaps the greatest aspect of this solar project is that at its core, it is an educational tool. What better place for this education to occur than at a university?

But Santee Cooper was not finished with developing landfill-gas generation. In September 2008, the Anderson Regional Landfill Generating Station, a 3-MW plant near Belton, entered service.

At the facility's dedication, it was pointed out that according to the U.S. Environmental Protection Agency every 1 MW of power produced at a landfill-gas facility is equal to removing almost 8,000 cars from area roads or planting more than 10,000 acres of trees.

This was Santee Cooper's second venture with Allied Waste Inc., owner and operator of the landfill in Lee County. In June 2008, Allied Waste merged into Republic Services, which owns and manages the facility today.

Solar energy was still on the front burner at Santee Cooper and again an institution of higher learning was the beneficiary. In February 2010, the Technical College of the Lowcountry Solar Canopies and its 20 kW went online.

Right:  
This flame,  
called "flaring,"  
is produced  
by methane gas  
and is a common  
sight at landfill gas  
generating stations.

Below left:  
The Berkeley Landfill  
Generating Station  
began commercial  
operation in  
February 2011.



The project included a series of nine canopies, each covered with 10 solar panels and sheltering a bench.

With only three exceptions, Santee Cooper power lines are not in close proximity to the Green Power facilities. Electric cooperatives have made it possible for the power to be placed on the grid.

Santee Cooper is the primary source of power for the state's 20 electric co-ops, and Palmetto Electric Cooperative meters and supplies to the grid the energy from the TCL solar array.

Palmetto Electric was the first co-op to promote Santee Cooper's Green Power to its customer, and Palmetto today has one of the largest groups of customers supporting the state's original renewable energy program.

Landfill gas installations marched on. In March 2010, the 1-MW Georgetown Landfill

Generating Station hit the grid. Then, eight months later, the power of the wind on the Grand Strand was applied when the 2-kW North Myrtle Beach Wind Turbine became operational.

This too was a milestone in the history of renewable energy in the state as South Carolina's first utility-owned wind turbine.

Santee Cooper's newest landfill-gas installation, the 3-MW Berkeley Landfill Generating Station located near Moncks Corner and a few miles from Santee Cooper's corporate headquarters, entered commercial operation in February 2011. It is the only facility of its type in the Lowcountry.

The final chapter to date in the history of Santee Cooper Green Power occurred in April 2011 in Myrtle Beach, with the Grand Strand Solar Station bringing 311 kW.

It features 1,325 solar panels mounted on rooftops and at an adjacent field at Santee Cooper's warehouse facilities on Mr. Joe White Avenue. Santee Cooper partnered with the S.C. Energy Office on the project.

That is Santee Cooper's Green Power story so far. Last year alone, **21,352 megawatt-hours** of this renewable energy was sold to:

- > **1,215 residential customers**
- > **356 commercial customers**
- > **One industrial customer**
- > **3,095 customers reached through co-ops and municipalities**
- > **40 Green Tag customers**  
(representing investor-owned utilities in S.C.)

Spivey says Green Power appeals to customers who have a desire to improve the environment and Santee Cooper's renewable energy portfolio will likely get larger as the years unfold.



A full-page photograph of a steel mill. In the foreground, a worker wearing a dark blue protective suit, a helmet with a headlamp, and a face shield stands with their back to the camera, looking towards a bright, glowing electric arc furnace in the background. The furnace is emitting a intense orange and yellow light. The worker is holding a coiled communication cable. The background shows industrial structures and pipes, all bathed in the warm, orange glow of the furnace.

# A Heart of Steel

BY SUSAN MUNGO

PHOTOS BY PAUL ZOELLER

It is hard to imagine steel having a soft side, but when you look closely at Nucor Corp., you will find a steelmaker that cares. Nucor is a manufacturer that cares for its teammates and customers, as well as the products it makes. Nucor is also an environmental steward, working to minimize the impact its mills have on the planet and the communities where Nucor's teammates live and work. Yes, Nucor has a soft side, and it is all heart.

Nucor has been in business for more than 110 years and has been making steel from recycled scrap metal for the last 50 years. The company has 24 steel mills and 200 total operating facilities, most of which are located in the United States. In South Carolina, Nucor has five locations. The steel Nucor produces makes thousands of useful items we see and use every day. In 2015, Nucor produced more than 19.9 million tons of steel, earning the title of America's largest steel manufacturer.

Nucor Steel – Berkeley, a division of Nucor, is a steel mill located in Huger that makes hot- and cold-rolled sheet and hot-rolled beam. They are also a Santee Cooper industrial customer.

Deric Faylor keeps on eye on electric arc furnace #2 as it begins the process of transforming 130 – 170 tons of scrap into liquid steel.





Clockwise from top left: Denny Boyd, electrical power engineer, looks out over the piles of scrap. From a distance, the scrap may look like mulch but upon closer inspection, the piles are full of car jacks and other used items. These scrap pieces of metal have been brought in by ship, rail and truck, then piled together, and are waiting to be picked up, melted and molded into another purpose. The small round DRI (inset), or direct reduced iron pellets, are made at Nucor plants in Louisiana and Trinidad.

“We

have a great relationship with Santee Cooper,” said Denny Boyd, electrical power engineer at Nucor Steel – Berkeley. “I believe it works because it is a partnership of two companies with similar core values.”

Those values start with a quality product.

Nucor Steel – Berkeley produces flat-rolled steel, which has hundreds of uses including parts for cars, water heaters, lawnmowers, appliances and more. The mill also produces steel beams that are used as support structures in bridges and buildings. Making millions of tons of much needed and useful products is a hot process. It’s a process that can also be very complicated.

Nucor teammates will tell you they have a “recipe” that is a part of each product produced. Along with scrap metal, Nucor Steel – Berkeley uses a mix of pure iron sources in the recipes that produce new steel. Those iron additives include pig iron, hot briquetted iron and direct reduced iron pellets, which Nucor makes at its plants in Louisiana and Trinidad.

Once Nucor teammates determine the recipe for a specific product, the mixture is put into an electric arc furnace (EAF), which can melt 170 tons of scrap in less than 35 minutes. The melting is mainly done with electricity that makes an arc between an electrode and the scrap. That arc reaches about 20,000 °F, melting and heating the scrap to 3,000 °F. By comparison, the surface of the sun is approximately 10,000 °F.

In addition, one Nucor EAF can use 50 to 150 megawatts of power by itself, which is equal to switching on more than 1 million incandescent light bulbs at the same time. This process of making steel is the most energy efficient and environmentally friendly method of steelmaking, being 90 percent more environmentally friendly than traditional steel production in a blast furnace.

Next, the liquid steel is poured – or “tapped” – into a ladle, which leads to a ladle metallurgy furnace (LMF). Here, the steel is refined by adding alloys specific to the order from Nucor’s customer. From the LMF, the liquid steel travels to a caster, which shapes the steel into slabs, billets, blooms or beam blanks. These shapes are all near to the final product shape, which allows an extremely efficient use of energy through the casting and rolling operations.

From this point, the steel goes through a process in either the hot strip rolling mill or the hot beam rolling mill, to refine the shape. Finally, strip steel can be pickled, cold rolled, annealed or galvanized, depending on what the customer needs.

This is how Nucor makes the tough, high-quality, American-made steel that the company is known for. But Nucor is also known for its soft side: a heart that embraces all things sustainable.

#### FROM STRENGTH TO HEART

Sustainability is not a buzzword at Nucor. It’s a longstanding commitment. In addition to taking care of its customers, Nucor’s teammates concentrate on taking care of each other, the environment and the communities that they call home.

Nucor’s teammates take care of each other by cultivating a safe work environment. Nucor retains a top notch workforce by offering a workplace that has both great benefits and rewards for performance.

General Manager Giff Daughtridge said, “We have 940 people on the Nucor Steel – Berkeley team, and it truly is a team. Everyone works together as we know, understand and believe in our common goals. We will be safe, we will take care of the environment, we will take care of our customers, and we will work hard to raise the quality of life for everyone in our



**Clockwise from top right: Electric arc furnace #2 melts both scraps and iron products into molten steel. Beams, weighing from 8 to 16 lbs. per foot, are made at the facility then stacked before shipping to customers. Work rolls are staged in front of the compact steel production hot mill for an upcoming roll change.**

communities. It is our simple strategy for long-term, sustained success.”

The environment is a major focus for this corporation, as demonstrated by its achievement of ISO 14001 certification for its Environmental Management System (EMS). Nucor’s EMS involves each and every teammate, and includes a policy, objectives and targets all aimed at minimizing Nucor’s impact on the environment. Nucor can proudly say it is North America’s largest recycler, last year using approximately 17 million tons of scrap steel to produce new steel.

Scrap takes less energy to melt than iron ore so Nucor saves energy with every ton of scrap melted. The company also recycles 80 percent of its waste streams. Oxidized surface steel, or mill scale, is sold to cement companies to be recycled as part of its products. Nucor also recycles the water used in its processes – multiple times.

Nucor is continuously improving its energy efficiency to produce more steel with less energy consumed. In fact, Nucor uses one quarter of the energy the average American steel mill uses to make a ton of steel, and seven times less than the average steel mill in China.

Although Nucor has already won numerous innovation awards for its energy efficiency, the company continues to encourage more energy saving and environmentally sound ideas. One recent innovation came in the form of a water-cooled roll, used in the tunnel furnace of the hot mill, which was replaced with a noncooled dry roll. This started as just an idea proposed by Nucor’s teammates, but soon became a reality, and now results in lower energy use, lower water use, cost savings and less impact on the environment.

The company also sets standards that take care of the little things that have a big impact, like ensuring Nucor teammates know how to dispose of every work item, from oil and rags to normal trash, in a way that will have little to no effect on the environment.

Nucor Steel – Berkeley cares about its community and the state, and the company shows that by doing business locally. Nucor purchases scrap and other materials and equipment from businesses with locations in the state, such as Charleston Recycling and Showa Denko Carbon.

Nucor also takes care of the community through conservation. Nucor has dedicated over 4,900 acres into a conservation easement held in trust by the Lord Berkeley Conservation Trust.

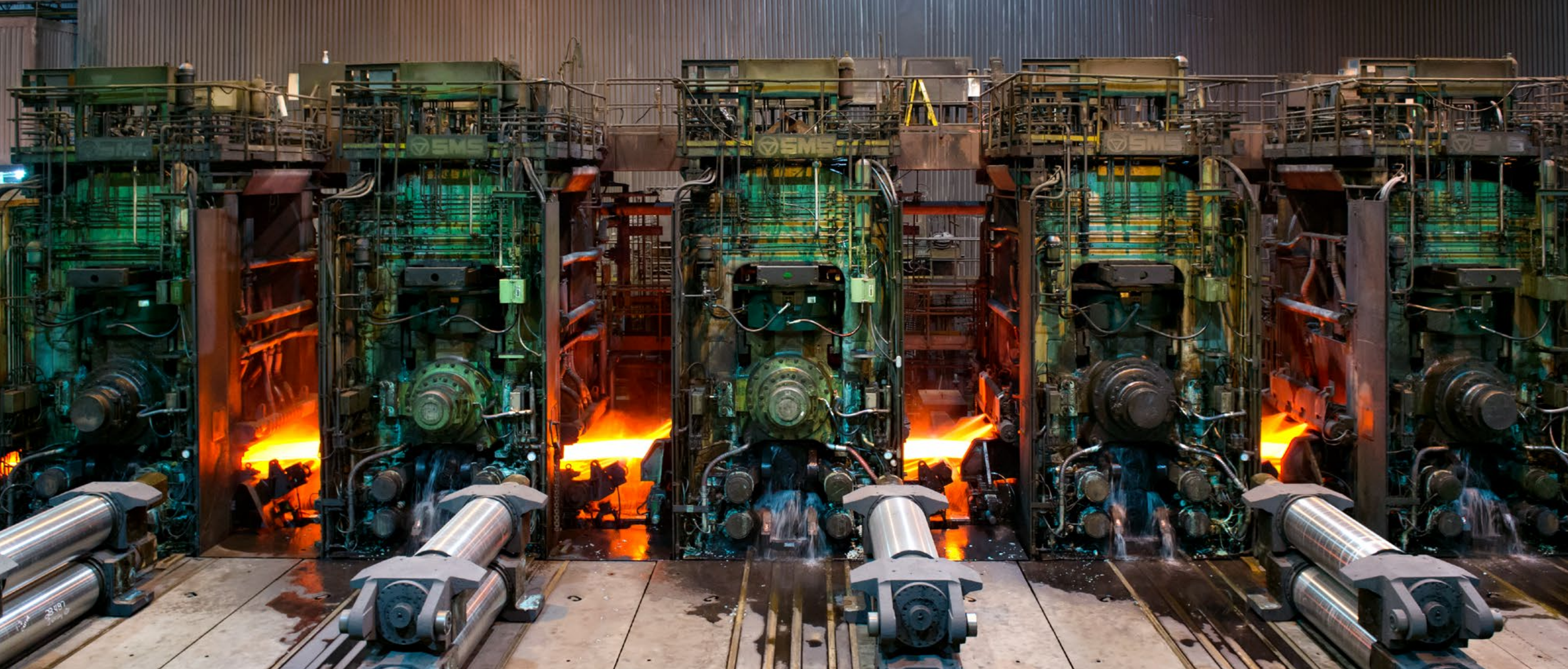
“I enjoy working and living in this area and, as a Nucor teammate, I believe it is important to give back in every way we can to preserve all that this area has to offer,” said Ray Sims, environmental manager at Nucor Steel – Berkeley.

Nucor also supports the community through local charities, like MUSC Children’s Hospital, Trident United Way, East Cooper Community Outreach and Hearts of Huger Revitalization Effort. These and many more organizations benefit from Nucor’s volunteerism and fundraising efforts.

Chris Kerrigan, president and CEO of Trident United Way, remarked, “Nucor is one of our top community partners. They have high participation in Day of Caring, year round engagement in the community, and a Trident United Way employee campaign that grows every year. For these reasons, in 2014 Nucor received our top Corporate Community Builder award. We are thankful for the advocacy and leadership of Nucor and the employee support we receive from every level of their organization.”







The line of fire above is actually a piece of steel in the hot rolling process moving through the finishing stands of the hot mill. That steel is then rolled before it is shipped to customers who make appliances, automobiles and many other products.



The company is also proudly committed to educating the next generation of manufacturers. At Nucor, each teammate and their dependents are eligible to receive a \$3,200 annual scholarship to college or vocational school. Since its inception in 1974, Nucor's scholarship fund has awarded more than \$80 million to more than 18,000 students nationwide.

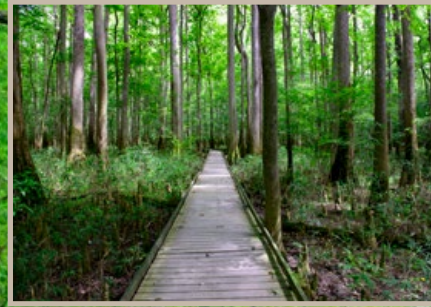
Nucor has faced its share of challenges. It was born during a time of adversity in the steel industry, and Nucor restructured in 1965 to

become the steel company it is today. It survived and thrived by creating a way to make the steel industry sustainable. Nucor has succeeded by continually innovating and changing and, most importantly, by constantly being mindful of the impact Nucor's processes and products have on this and future generations.

Nucor is a company of steel, but it is a steel-maker with a soft spot for the community and the environment.



Boardwalk at Congaree National Park



***This year the  
National Park Service  
turned 100 years old.***

**As they celebrate, they are  
already looking forward to  
continuing the stewardship  
of America's national parks  
by engaging communities  
through recreation, conservation  
and historic preservation.**

The National Park Service was created by an act signed by President Woodrow Wilson on Aug. 25, 1916. Prior to that, Yellowstone National Park was established as the nation's first national park by an act signed by President Ulysses S. Grant on March 1, 1872. However, Hot Springs National Park in Arkansas argues they should have that claim to fame. In legislation signed in 1832 by President Andrew Jackson, Hot Springs became the first federally protected piece of land in the United States.

Currently, there are nine properties owned or managed by the National Park Service in South Carolina, most of which are historic military battlegrounds:

- **Charles Pinckney National Historic Site in Mt. Pleasant**
- **Congaree National Park in Hopkins**
- **Cowpens National Battlefield in Chesnee**
- **Fort Sumter, National Monument in the Charleston Harbor**
- **Gullah/Geechee Cultural Heritage Corridor (North Carolina to Florida)**
- **Kings Mountain National Military Park in Blacksburg**
- **Ninety Six National Historical Site in Ninety Six**
- **Overmountain Victory National Historic Trail (South Carolina, North Carolina, Tennessee and Virginia)**
- **South Carolina National Heritage Corridor in Edgefield**

The South Carolina National Park Service says more than 1.5 million people visited parks in the state in 2015, resulting in nearly an \$83 million economic benefit.

There is still time to Find Your Park, which is a program designed to encourage everyone to find their perfect park. The National Park Service's Find Your Park website encourages park goers to share stories on how they found their park, their way: [www.findyourpark.com](http://www.findyourpark.com).

For more information on the NPS locations in South Carolina visit [www.nps.gov/state/sc](http://www.nps.gov/state/sc).

# A Centennial Celebration of Nature

***By Susan Mungo  
Photos by Paul Zoeller***

Wise Lake  
at Congaree  
National Park;  
a view of  
Fort Moultrie  
(inset, right).





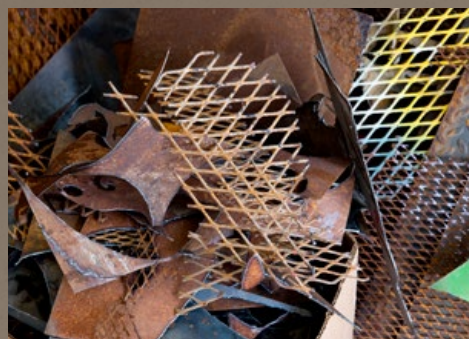


Photo provided by Jim Arendt



# ARTISTIC TRANSFORMATIONS

By Nicole A. Aiello

Photos by Paul Zoeller

*Charles Clary has an imagination that could make Tim Burton jealous. He views the world through his own microscope, looking at ordinary things we regard as uninteresting in a curious and unconventional way.*

*Clary, an artist and the Foundations coordinator at Coastal Carolina University, merged his passion for art, interest in microbiology, concern for discarded items and strong childhood memories into something new: intricate, layered sculptures.*

“Early on, I really wanted to be a microbiologist. I’ve always been fascinated by disease, mold, fungi and microbiology,” Clary said. “If you were to remove the context and what these things are, they are absolutely stunning. I started to think, ‘What if Dr. Seuss created a viral or bacterial entity that playfully inhabited his world? What would that look like?’”

As a resident in graduate school in New York City, Clary walked into a paper store on his way home one day and was blown away by the color choices. He admitted becoming obsessed with the colors, the fragility, the rigidity and the versatility of paper. He layers the paper into three-dimensional artworks reminiscent of the microbes by which he was so fascinated.

Although paper is still a medium he uses with frequency, Clary is now digging into the world

of thrift shopping, discovering materials for his artwork that are not necessarily new, but new to him.

“I’m a connoisseur of Goodwills, thrift stores, flea markets, Habitat Restores and sometimes eBay if I’m looking for something specific,” Clary said.

Gathering old, discarded and damaged items, Clary considers them as something more significant than trash.

“I remember my mom loved to wallpaper and we absolutely hated it, but we would re-wallpaper often,” Clary said. “I remember picking at the seams and wondering what was behind the veil, did the wall have feelings, was there a way to escape my trauma through a magical portal? Where was my Narnia?”

Artistic inspiration can be found in the most ordinary of materials.

Artists Jim Arendt, Tim Woods and Charles Clary use blue jeans, scrap metal, drywall and wallpaper to create masterpieces.





Above:  
Charles Clary  
meticulously  
fashions art by  
merging hand-cut,  
layered paper  
with drywall and  
wallpaper, game  
boxes, movie  
posters and more.

Clary didn't find Narnia behind the wallpaper in his childhood home, but he is creating his own fantastical escape with broken and battered materials he turns into art. Wallpaper, drywall, movie posters, old VHS tape cases – they're all elements he utilizes to showcase his view of the world. Clary has also started rummaging for old toy boxes, from the 80s through modern day, and game board boxes for new projects.

"It pains me to see these things that were once regal objects thrown into thrift stores and being sold for a fraction of what they once were," Clary said.

By reusing and recycling castoffs, Clary makes those unwanted objects timeless and valued.

"There is also a sense of nostalgia that each viewer brings to my work, a faint memory that gets sparked back into life," he said.

### "I'm a recycled human being."

Inspiration comes in many forms. Clary found it in wallpaper and drywall. For Tim Woods, who recently moved to North Myrtle Beach, images and beauty emerge in piles of discarded, rusting metal.

Woods worked as a machinist before moving to South Carolina about a year ago. In his work, he'd scrutinize plans – flat, technical, two-dimensional drawings – as his guide for the product he was making. With only an illustration in front of him, he had to imagine the final product out of the flatness of that drawing.

"That takes an artist's touch," Woods said. "The machinist part of me was over. There was an artist in there."

After 35 years in the machine shop, Woods was ready to confront that artist inside him. In the rusted heaps of twisted metal and in the patina of old, smooth sheets of steel, images would show themselves to Woods, telling him what they wanted to become.

"I look at a scrap pile and I see something out of it, and a shape on it will stand out. I pull that shape out, making it something new," Woods said. "The first thing I made was an 8-ft. tyrannosaurus rex. It was a skeleton. It was beautiful."

Once Woods imagines a figure in the metal, he cuts it out and welds it together, making it come alive as a sculpture. With each piece, Woods said there's a discovery, not in only the discarded metal, but also in himself and those around him. Converting random pieces of steel into artwork has helped him reinvent himself as an artist, and he realizes what he once considered trash can now be made into treasure.



Charles Clary

What if Dr. Seuss created a viral or bacterial entity that playfully inhabited his world?  
**What would that look like?**



Drag-a-Diddle  
Desperation (top),  
18" x 20" x 10",  
hand cut paper  
and wallpaper  
on distressed  
wall board.

Connect 4 (center)  
was a game  
that occupied  
many hours for  
a young Clary.  
This piece  
includes hand  
cut paper and a  
found game board.

Filamentous  
Flam-a-Necrosis  
Movement #1  
(bottom),  
15" x 20" x 10",  
hand cut paper  
and wallpaper  
on distressed drywall.



Tim Woods

We're not who we were 10 years ago, and that piece of steel is not what it was when it left the mill. It's going to be recycled into something new. **It's a transformation.**



This page: Steel scraps and gears make up Tim Woods' Gear Head. Woods cuts and welds (inset) discarded steel scraps into works of art.



"We're getting recycled every day as we're growing. I'm a recycled human being," Woods said. "We're not who we were 10 years ago, and that piece of steel is not what it was when it left the mill. It's going to be recycled into something new. It's a transformation."

Some of the images that have revealed themselves to Woods in old metal include crosses, roosters, pigs, palm trees and alligators. He's also incorporating some stone into his works, like the simple but elegant ducklings that seem to glide through his yard. Most importantly, though, he's reusing those materials to make something new and fascinating.

"It's very important to me to reuse material. In my machine job, I threw so much away," Woods said. "There were sheets of metal at a factory that trucks were running over. I picked them up and thought, 'I need to make something out of this.' There's a lot of stuff around our houses that could be fixed or repurposed that most of us toss away. Since I've been doing this, there's nothing I throw away."

#### From Landfills to Museums

Clary and Woods use everyday objects, like wallpaper or steel scraps, for their renaissance. Jim Arendt, on the other hand, fashions art out of an American clothing revolution – jeans.

Jeans have been a staple in American households for decades. Invented in the 1870s as durable, practical "waist high overalls," jeans had a humble beginning as clothes that could



This page, from top: "It's important for me to reuse material," said Tim Woods, who turns scrap metal into sculptures. Woods' rocking geese, made of metal and stone, appears to glide over the grass.







withstand hard labor. Over the last century, jeans became not only practical, but stylish and trendy. And now, many of these neglected, time-worn pieces of clothing are being transformed.

Arendt is an assistant professor of visual arts and the director of the Rebecca Randall Bryan Art Gallery at Coastal Carolina University. He began his life in Flint, Mich., birthplace of General Motors Corp. As a child, he watched his family, neighbors and community struggle with their farms and lose their manufacturing jobs. Resilience and hard work ethic were sewn into the fabric of his soul before Arendt left the area to pursue college and his love of art.

“When I was young and my family was living through the farm crisis of the early 1980s, I remember my father sitting at the sewing machine, patching his Wranglers in the evening. He was making do, a concept of thrift and pragmatism that dictates you work with the materials at hand,” Arendt explained.

Combining his love of art and strong work ethic with those old, once-hardworking jeans that otherwise would end up in a landfill, Arendt

creates three-dimensional works of art that speak to his memories of family hardships and his need to understand the shifting relationship with labor and work.

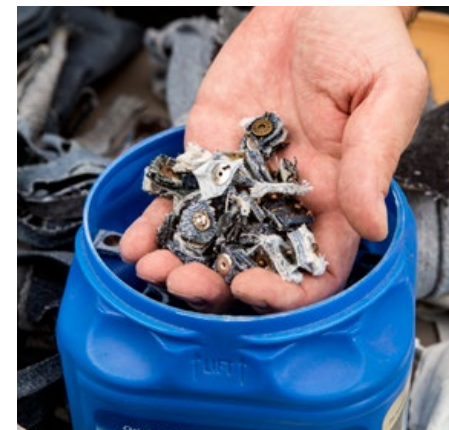
Arendt sews by hand, by machine and even with glue. Along with other tools, he uses his mom’s Kenmore, an industrial World War II Singer and tools that may no longer have much use in modern society, like 19th century tailor’s shears. His artwork reclaims people and memories from his past and celebrates lives that aren’t idealized or glamorized. It also reclaims that durable, practical material that has shown itself to be of great importance in American history.

“As an artist who is interested in turning stories of suffering into stories of resilience, I enjoy the transformation of something destined for the landfill into a work destined for museums,” Arendt said. “I think as an artist it is important to consider how the materials we work with affect the world around us.”

With this belief, Arendt said he questions whether people, including himself, can expand a material’s usefulness and make its second life as long as possible. He is constantly searching for ways to creatively repurpose material and transform waste into value.

“Usefulness and longevity are old-fashioned values, but increasingly important to cultivate as we all stare into a future of increasing resource demands, environmental degradation and population growth. Recycling is great, but the correct design question to ask is, ‘Why do I have anything to recycle at all?’”

**Clockwise from top left: Jim Arendt sews by machine, by hand and even with glue to create art from discarded jeans. Arendt saves every scrap of jean material, including buttons and rivets, to reuse in artwork. Although nearly obsolete, these 19th century tailor’s shears help shape Arendt’s artwork. Three of Arendt’s works: Mike; Logan; and Paul, Totemic Figure.**

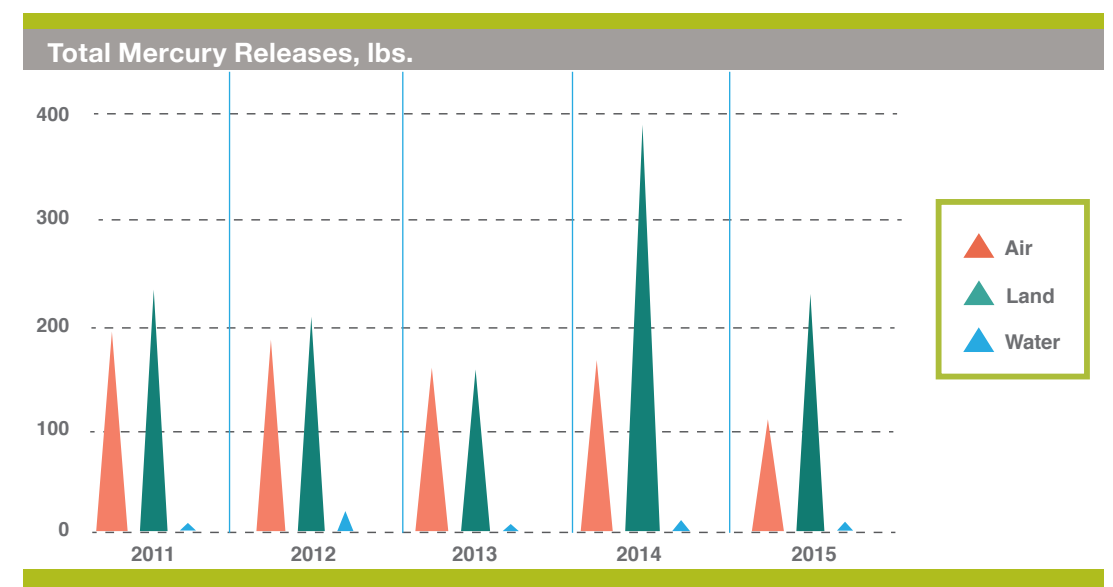
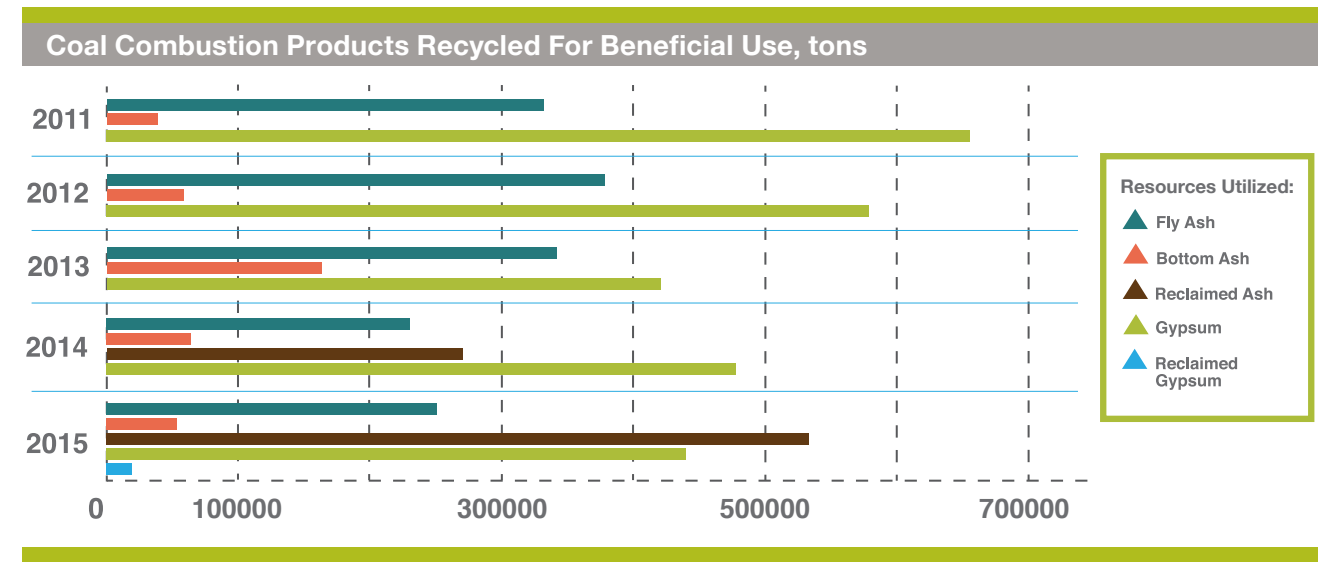
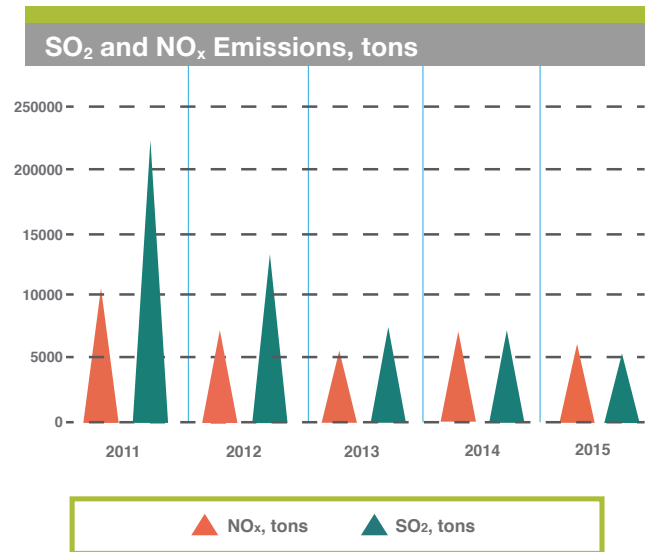
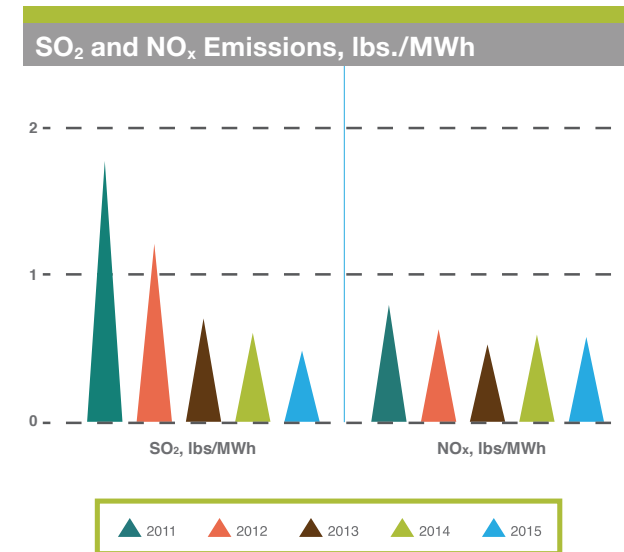
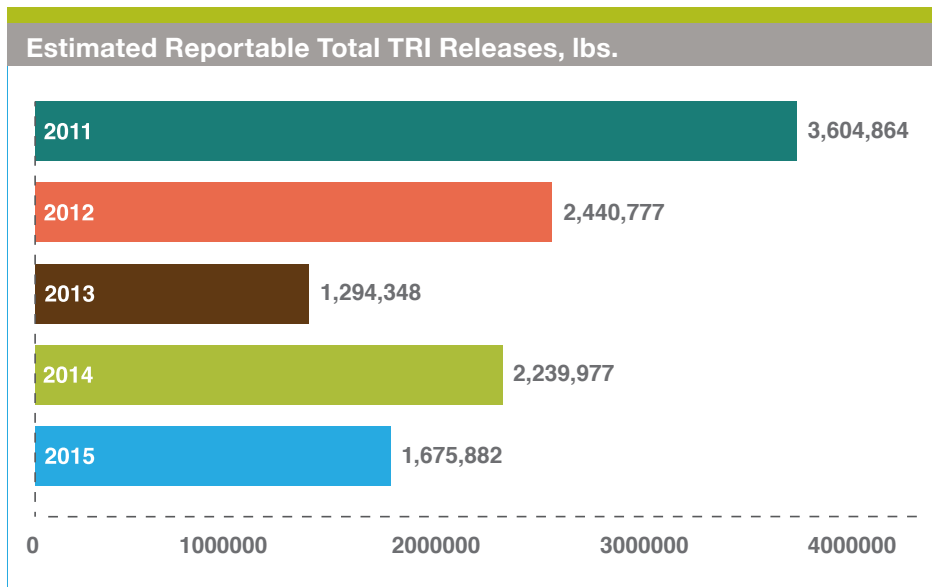
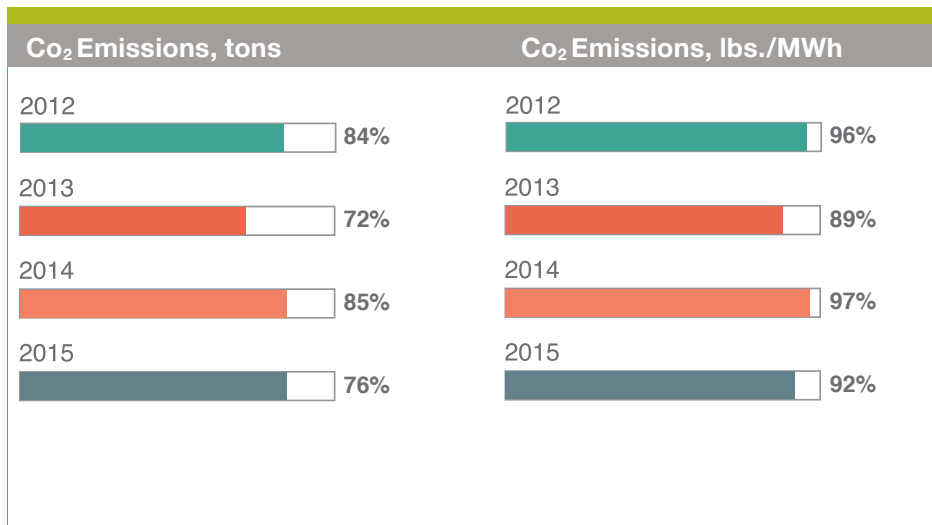
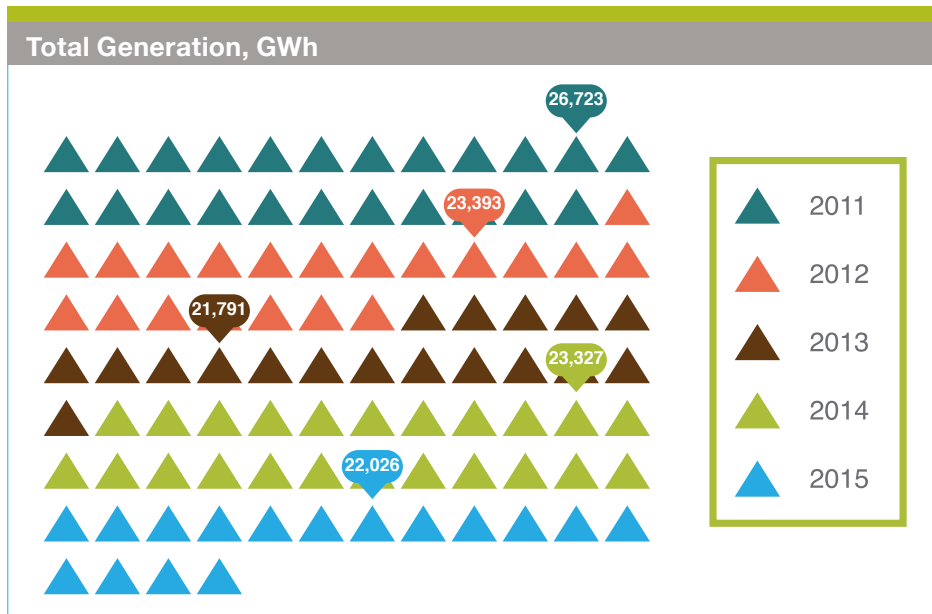


Photos bottom row courtesy of Jim Arendt

I enjoy the transformation  
of something destined for  
the landfill into a work  
**destined for museums.**

*Jim Arendt*









### EmPowering new business

Before the first aircraft flew, and before people showed up to their new job, Santee Cooper helped power **Executive HeliJet's** expansion to Myrtle Beach, creating a \$1 million economic partnership for South Carolina.

Since 1988, we've been a driving force behind more than \$11 billion in industrial investments that have produced over 67,000 new jobs. And we're not slowing down. With our low-cost, reliable power, creative incentive packages and diverse property portfolio, Santee Cooper, working with the South Carolina Power Team and the state's electric cooperatives, continues to power South Carolina toward **Brighter Tomorrows, Today.**



**POWERING  
SOUTH CAROLINA**

[www.santeecooper.com](http://www.santeecooper.com)